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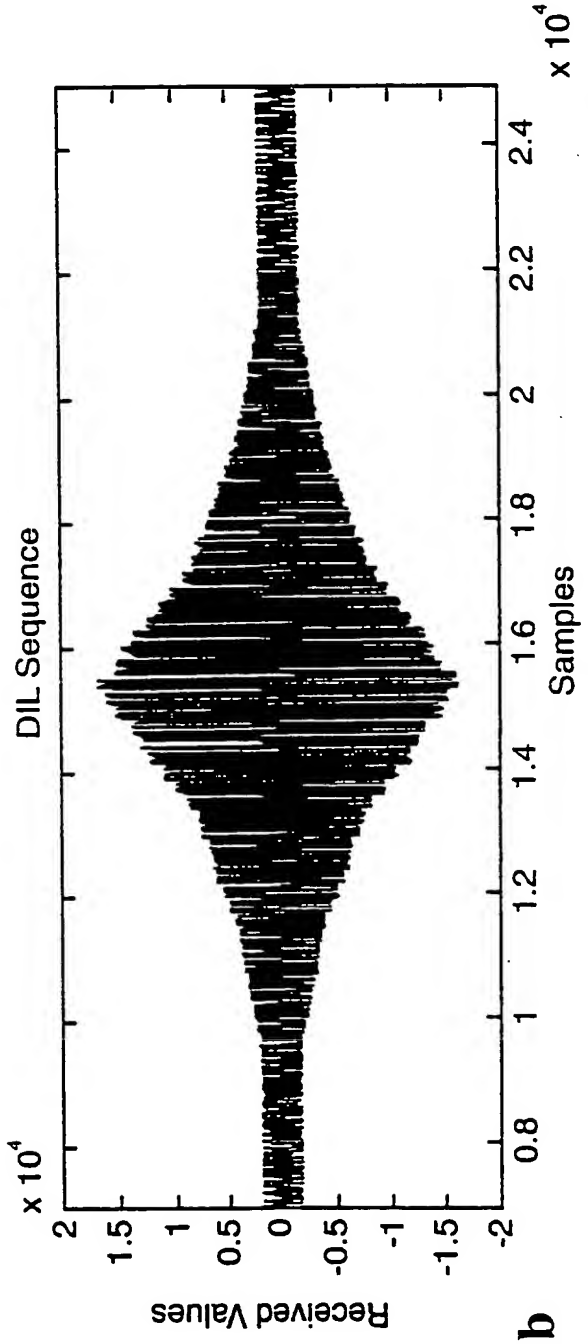

Figure 1b

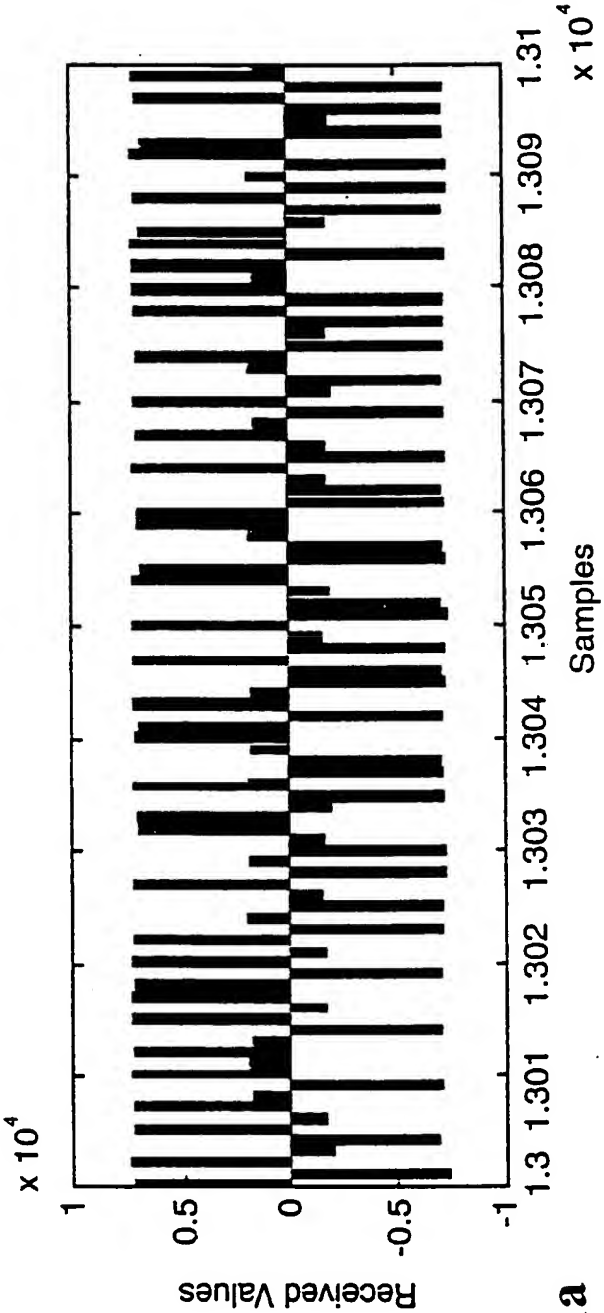

Figure 1a

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	Sign and Training Pattern					
Frame	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
1	+R	-T	-R	+T	-R	-T
2	+T	+R	-T	+R	+T	-R
3	+R	+T	-R	+T	-T	-R
4	-T	+T	+R	+T	-T	+T
5	+T	-R	-T	+T	-T	+R
6	-T	+T	+T	-T	-R	-T
7	+T	-T	+T	+R	+T	-T
8	-R	-T	+T	-T	+T	-T
9	+T	+R	+T	-T	+R	-T
10	+R	-T	+T	+R	-T	-R
11	-T	+T	-T	-T	+T	+T
12	+T	-R	-T	+T	+R	+T
13	-R	-T	+T	-R	-T	+T
14	-T	+T	-R	+T	-T	+R
15	-T	+T	+R	-T	+R	+T
16	-T	-R	+T	-R	-T	+R
17	-T	-T	+R	+T	+T	-T
18	+T	+R	-T	-T	+T	-T
19	-R	+T	-T	-T	-R	+T
20	+T	-T	-T	-R	+T	+T

The "T" in the table represents a training amplitude.
The "R" in the table represents a reference amplitude.
The "+" or "-" represents the sign of the symbol.

Figure 2

Blakely, Sokoloff, Taylor & Zafman LLP
(503) 439-8778

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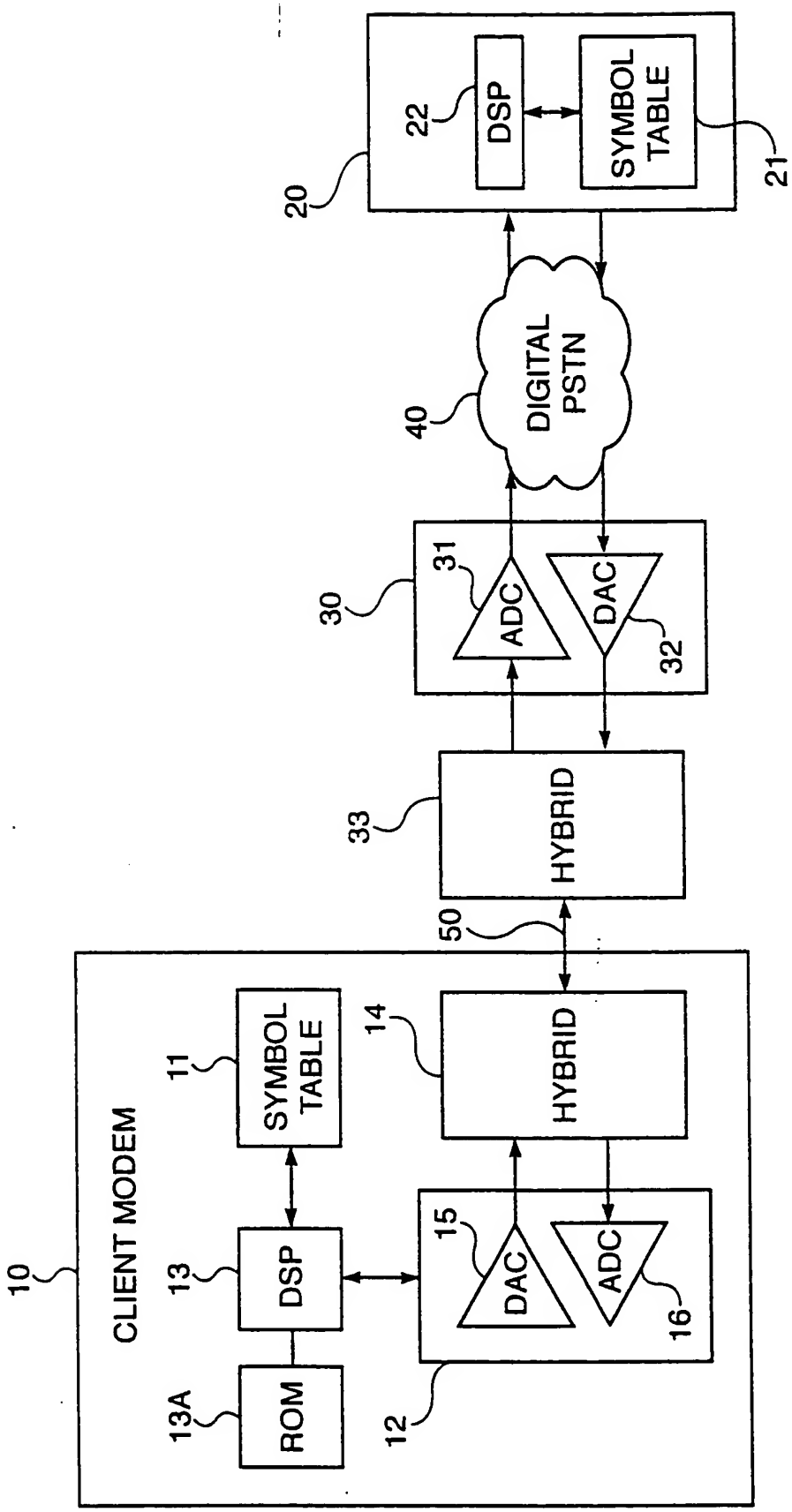

Figure 3

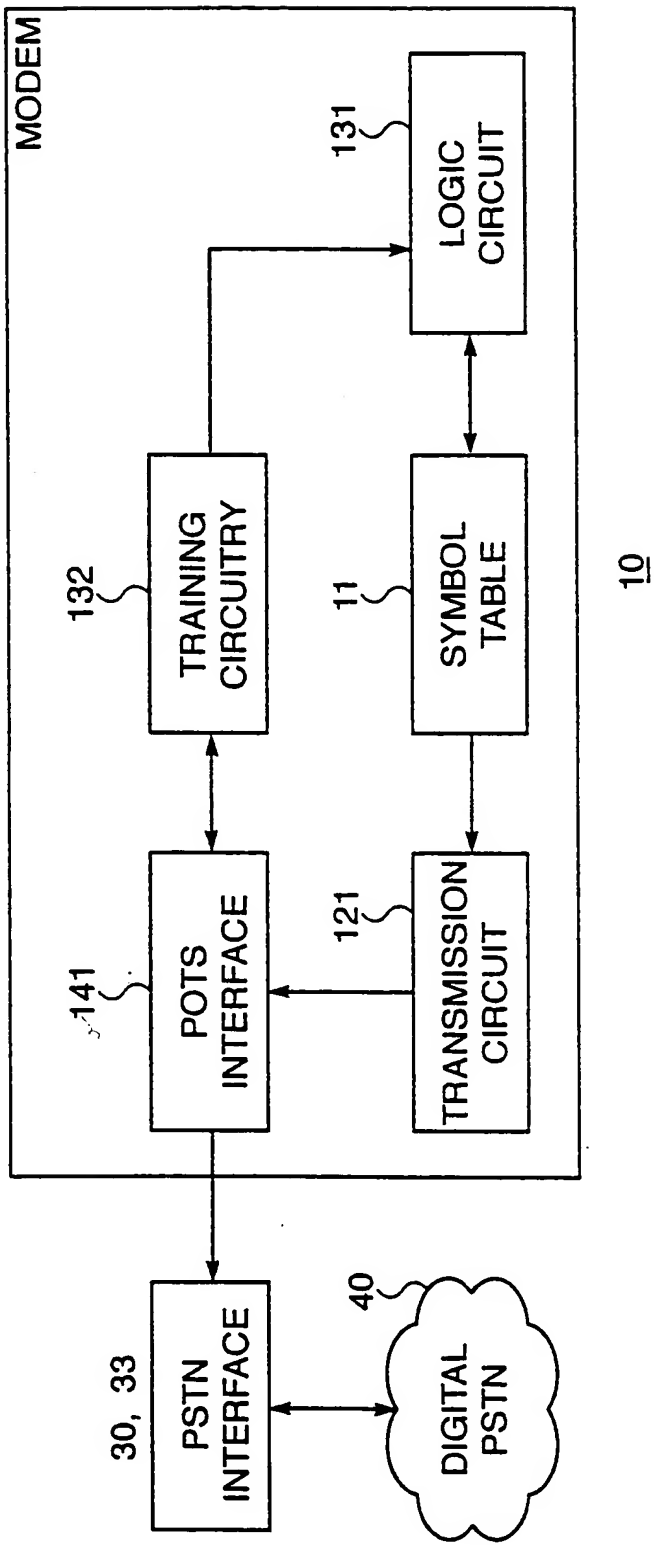
MODEM
131
LOGIC CIRCUIT
132
TRAINING CIRCUITRY
11
SYMBOL TABLE
10
141
POTS INTERFACE
121
TRANSMISSION CIRCUIT
30, 33
PSTN INTERFACE
40
DIGITAL PSTN

Figure 4

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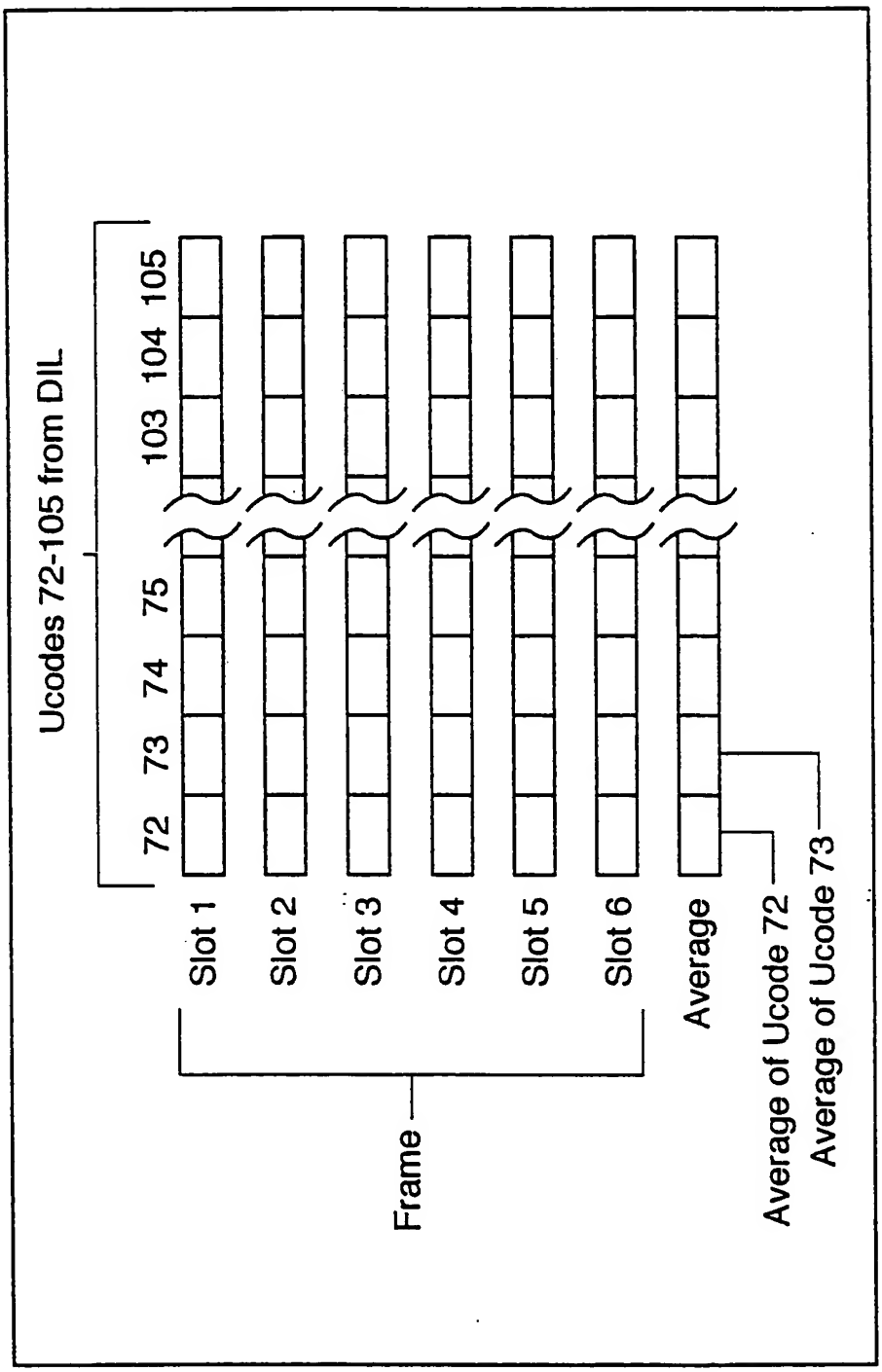


Figure 5

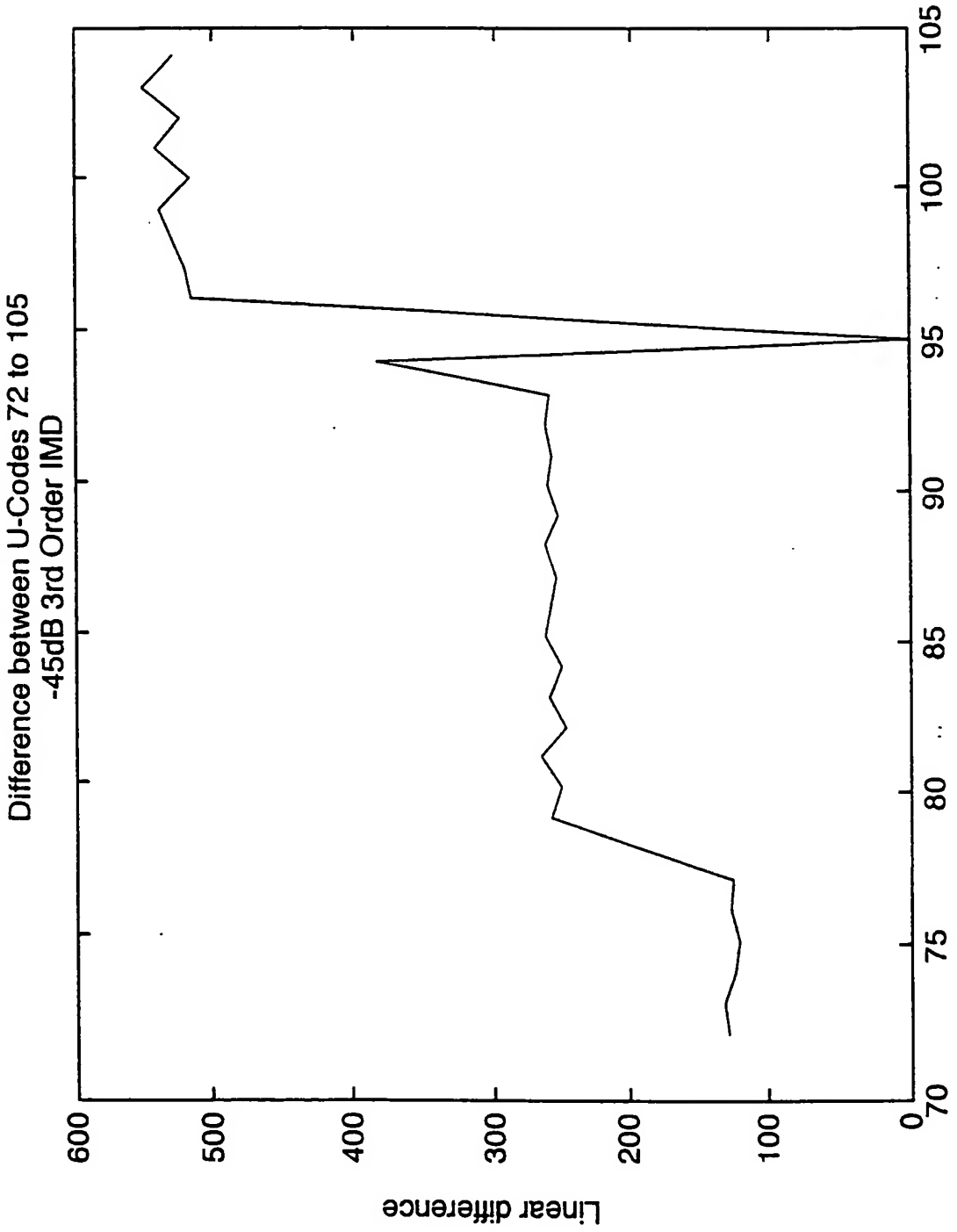

Difference between U-Codes 72 to 105
-45dB 3rd Order IMD
Linear difference
U-Codes
0
100
200
300
400
500
600
70
75
80
85
90
95
100
105

Figure 6

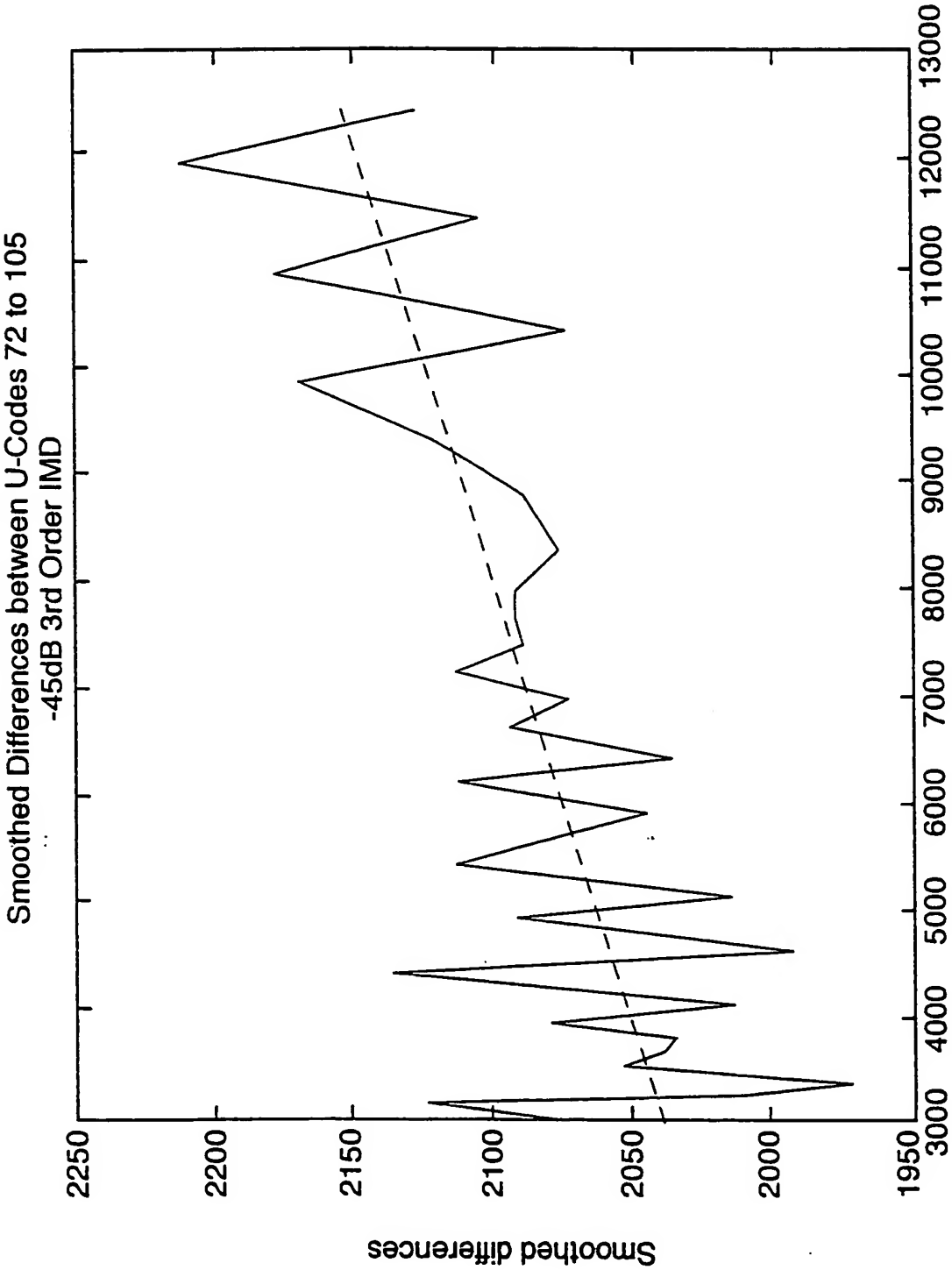
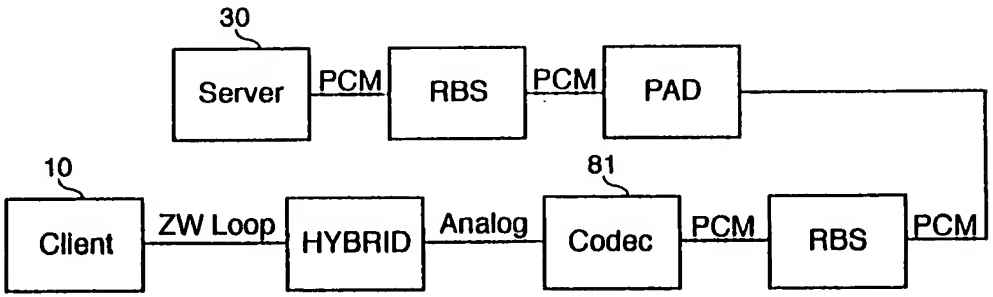

Smoothed Differences between U-Codes 72 to 105
-45dB 3rd Order IMD
Smoothed differences
Linear values
2250
2200
2150
2100
2050
2000
1950
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000

Figure 7



PCM -an 8-bit μ law or A-law digital symbol transmitted over the network. The symbol represents a signal amplitude.
Linear - the linear value corresponding to the digital symbol (see G.711):
Analog - the local twisted-pair from the central office to the modem.

Figure 8

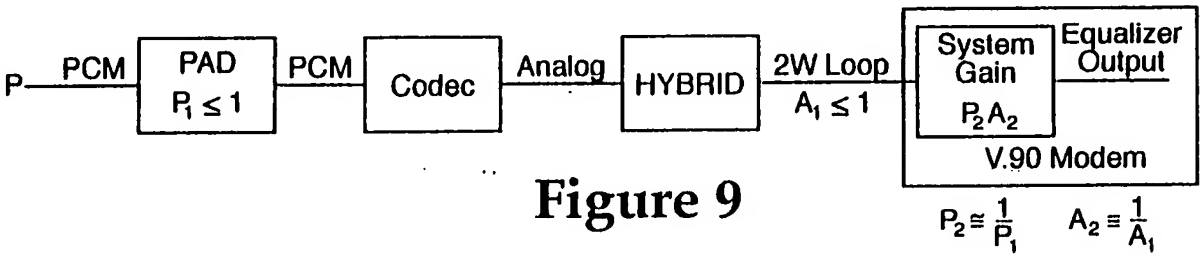


Figure 9

$$\text{Error} = \frac{\sum_{n=\text{Ucode 72}}^{\text{Ucode 105}} \left| \text{Received Sample}_n \cdot \text{Test Fraction} - \text{SLICED}[\text{Received Sample}_n \cdot \text{Test Fraction}] \right|}{\text{Test Fraction}}$$

SLICED[x] - results in the G.711 value closest to x.
Ucode# - refers to PCM symbols sent by the server (see V.90 specification)
Received Sample$_n$ - an average received value from the DIL sequence corresponding to Ucode#.
Test Fraction - a value between 1.0 and 0.25 that is adjusted to result in a minimum error

Figure 10

Blakely, Sokoloff, Taylor & Zafman LLP
Title: PAD and CODEC Detection
1st Named Inventor: Jeffrey Allan Green
Application No.: 10/805102
Sheet: 8 of 11
Docket No.: 42P12962C
(503) 439-8778

U - Code Sent	Avg. Received Value	Using 0.5 as the Text Fraction	Absolute Error	Using 0.5077 as the Test Fraction	Absolute Error
90	6673	3337	51	3388	0
91	6925	3463	53	3516	0
92	7178	3589	55	3644	0
93	7430	3715	57	3772	0
94	7682	3841	59	3900	0
95	8060	4030	62	4092	0
96	8060	4030	62	4092	0
97	8564	4282	66	4348	0
98	9068	4534	70	4604	0
99	9573	4787	73	4860	0
100	10077	5039	77	5116	0
101	10581	5291	81	5372	0
102	11085	5543	85	5628	0
103	11590	5795	89	5884	0
104	12094	6047	93	6140	0
105	12598	6299	97	6396	0

Figure 11

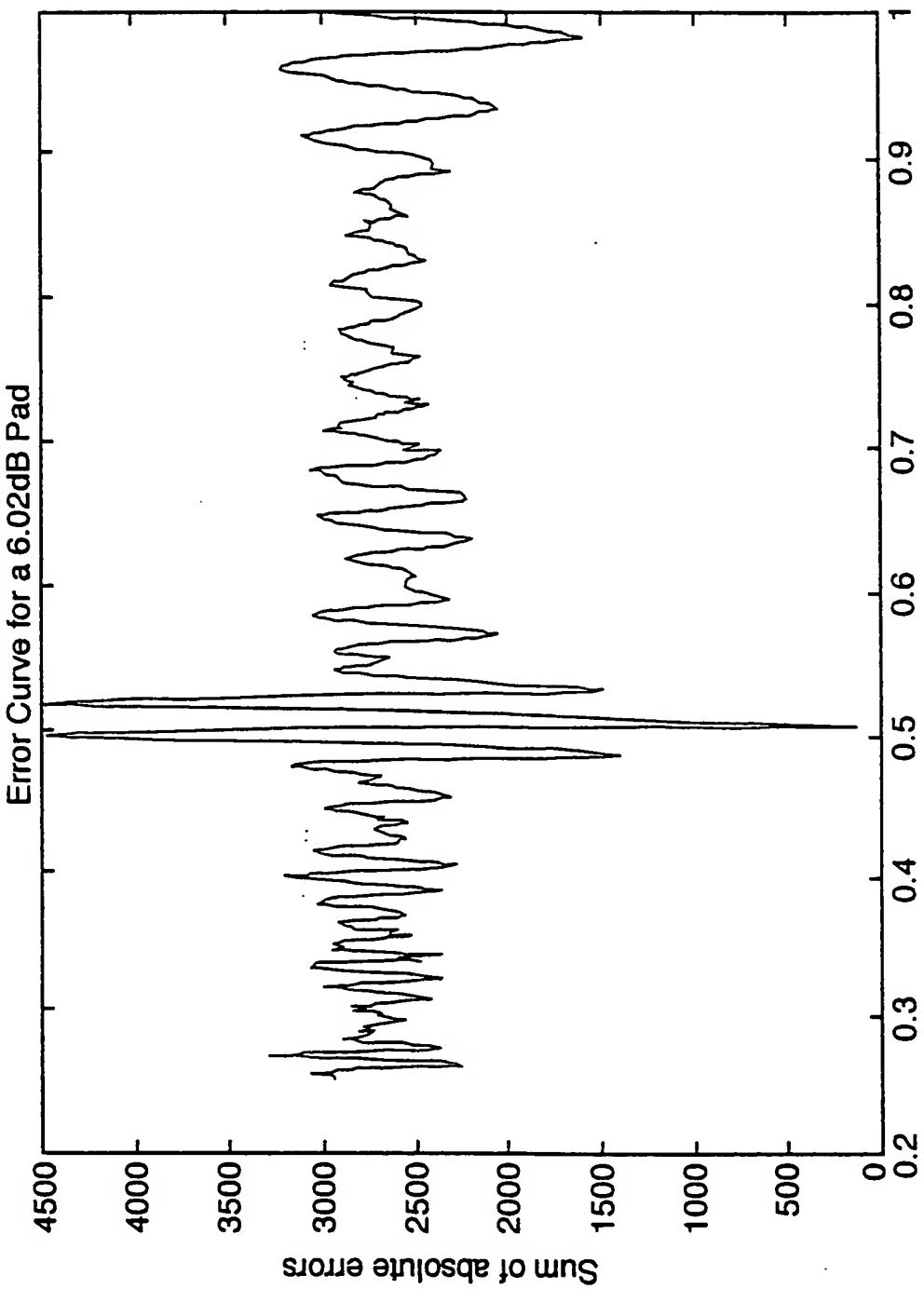

Error Curve for a 6.02dB Pad
Sum of absolute errors
Test fractions
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

Figure 12

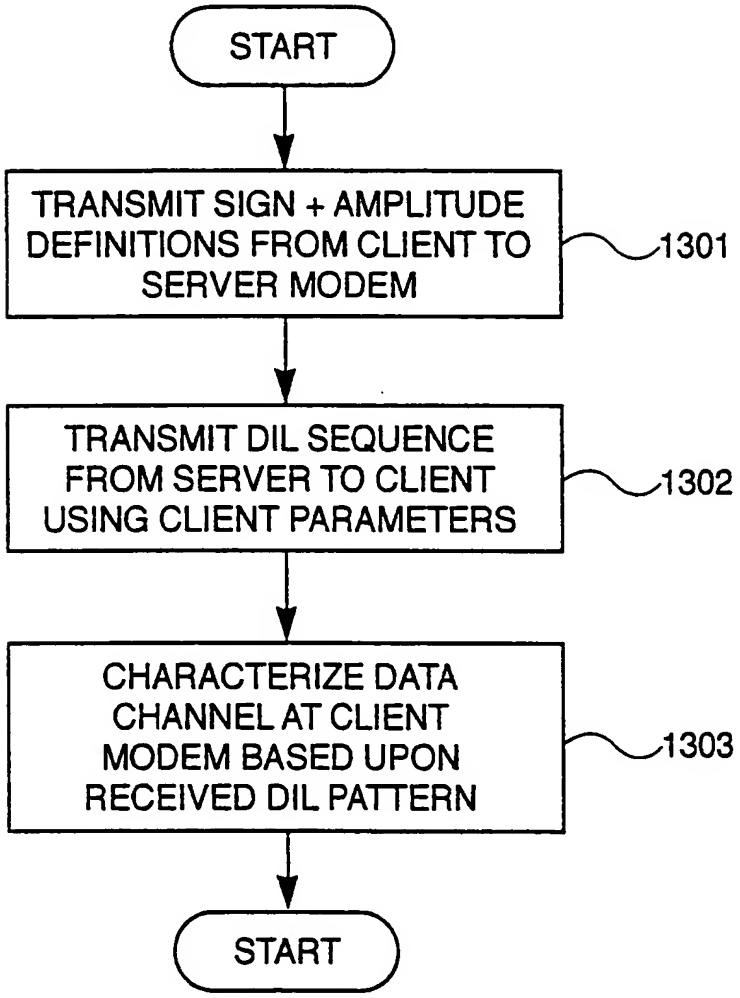

START
TRANSMIT SIGN + AMPLITUDE DEFINITIONS FROM CLIENT TO SERVER MODEM
1301
TRANSMIT DIL SEQUENCE FROM SERVER TO CLIENT USING CLIENT PARAMETERS
1302
CHARACTERIZE DATA CHANNEL AT CLIENT MODEM BASED UPON RECEIVED DIL PATTERN
1303
START

Figure 13

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